



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/330,134	06/11/1999	ALAIN BETHUNE	103602	9029

25944 7590 01/02/2003

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

JOLLEY, KIRSTEN

ART UNIT	PAPER NUMBER
----------	--------------

1762

DATE MAILED: 01/02/2003

23

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/330,134

Applicant(s)

BETHUNE, ALAIN

Examiner

Kirsten Crockford Jolley

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-40,45-62 and 82 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-40,45-62 and 82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. The 35 USC 112, 1st paragraph and 2nd paragraph rejections set forth in the prior Office action have been withdrawn in response to Applicant's amendments and cancellations to the claims.
2. Applicant's submission of a translation of the French priority document is acknowledged. Accordingly, the 35 USC 102 and 103 rejections over the Anai et al. reference have been withdrawn. However, the Examiner notes that the Hasebe et al. reference is applied in lieu of the Anai et al. reference as it teaches a similar spin coating apparatus; for this reason, this Office action is made non-final. Additionally, it is noted that the French priority document does not teach the limitations of claims 48-51, therefore the priority date is not the effective filing date for those claims.
3. The rejections over the Iwasaki and Clark references^{alone} have also been withdrawn in response to Applicant's cancellation of claims 1-33, 41-42, and 63-81.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 48-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 48 is vague and indefinite because it is not clear whether the coating deposited inside the article (which rises up the side walls) is a further clarification/description of the coating applied in independent claim 34, or whether the coating deposited inside the article is in addition to the coating of claim 34. Since the specification only discloses a coating applied as set forth in claim 34 to the *exterior* of hollow articles, claim 48 has been interpreted for the purpose of examination as requiring a coating applied to the interior of a hollow article *in addition to* the coating applied by the method of independent claim 34. The Examiner suggests that Applicant clarify claim 48 to indicate that the coatings applied in claims 34 and 48 are applied to separate areas.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 34-40, 45-46, 52-54, 58-59, and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasebe et al. (US 5,658,615).

As to claims 34-36, 39-40, 52, 54, and 59, Hasebe et al. teaches a method of spin coating on a rectangular, planar semiconductor substrate with solvent solution whereby solvent is supplied to the center of the substrate and to four corner portions of the substrate (col. 11, line 56 to col. 12, line 5 Figure 14). Hasebe et al. teaches that preferably the branched nozzles 3a are disposed to correspond to the four corners of the

Art Unit: 1762

rectangular substrate G in order to make diffusion of the solvent uniform. While it is acknowledged that Hasebe et al. does not specifically teach applying the solvent directly to a surface of the article which is not covered by said coating spreading under the effect of centrifugal force (i.e., the four corners), it would have been obvious to have placed the nozzles over the portions where spreading does not reach since Hasebe et al.'s embodiment is directed to improving the uniformity of coating, particularly of rectangular substrates.

As to claim 37, Hasebe et al. teaches that arm on which the nozzles are located is movable/retractable in Figure 1. As to claims 38 and 53, Hasebe et al. does not teach supplying solvent while the substrate is not rotating or at the moment that the substrate is set into rotation, however it is noted that it is very well known in the spin coating art to apply coatings prior to or at the start of rotation. It would have been obvious to one skilled in the art to have supplied solvent at the start of rotation or just slightly after the start of rotation with the expectation of achieving similar results since such is well known in the art, and because the claims read on supplying solvent within a fraction of a second from the start of rotation, and such steps approach Hasebe et al.'s method. As to claim 45, it is noted that it is known to use water as a solvent in photoresist coating methods; water is not an organic solvent.

As to claim 46, Hasebe et al. teaches temperature adjustment solution supply paths to maintain the coating solutions at constant temperature (e.g., 23 degrees Celsius) (col. 7, lines 1-14). It is the Examiner's position that in certain air-conditioned rooms or regions of the world, 23 degrees C is greater than ambient temperature. As to claim 58, it is noted that the term "paint" is broad and is inclusive of the resist coating applied to the

semiconductor substrate. As to claim 82, it is noted that the top surface of the semiconductor substrate may be considered the outside of the article.

8. Claims 34-40, 46-47, 52-54, 57-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki (US 5,002,799) in view of Hasebe et al.

Iwasaki is directed to coating the exterior surface of a face plate of a cathode ray tube, which is considered to be a container lid. Iwasaki lacks the disclosure of a step of applying its coating to a surface of the article which is not covered by said predetermined quantity of coating spreading under the effect of centrifugal force, i.e., to the corners of the rectangular face plate. Iwasaki discloses in col. 5, lines 4-19, problems with coating irregularities in conventional spin coating processes at the corners of the face plate. One skilled in the art would have been motivated to look to other spin coating processes to determine methods for forming even coatings particularly at the corners when using rectangular substrates.

Hasebe et al. accomplishes this problem by providing its solvent solution at the corners of a rectangular substrate in addition to supplying solvent at the center of the substrate. It would have been obvious for one having ordinary skill in the art to have used the method of Hasebe et al., specifically providing coating material at the corners of the substrate in addition to at the center portion, with the expectation of achieving improved, uniform coating on the entire substrate.

As to claims 46-47, Iwasaki teaches a heating step which inherently reaches a temperature greater than ambient temperature; in heating the coated substrate, Iwasaki's coating necessarily reaches a temperature lying in Applicant's claimed range.

Claims 35-40, 53-54 are rejected for the reasons discussed above in paragraph 7.

9. Claims 55-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki (US 5,002,799) in view of Hasebe et al. as applied to claim 34 above and further in view of Iwasaki (US 5,599,579).

Iwasaki '579 is applied for the same reasons set forth in the prior Office actions with regard to claims 16-17.

Allowable Subject Matter

10. Claims 48-51 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Claim 48 is allowable because the prior art does not teach or fairly suggest coating both the inside and outside of a hollow article, where the outside is coated by the method of claim 34 and the inside is coated by causing the coating solution to rise up the side walls of the article by centrifugal force. Claims 49-51 are allowable because they depend from claim 48.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tateyama et al. (US 5,695,817) is similarly cited for its teaching of applying solvent to corner portions of a substrate (Figure 20), and also for applying solvent to the underside of a semiconductor substrate for rinsing in addition to applying solvent to the center portion of a substrate.

Art Unit: 1762

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten Crockford Jolley whose telephone number is 703-306-5461. The examiner can normally be reached on Monday to Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 703-308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193.

kcj

December 27, 2002



SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700